

## **ARGUMENTS/REMARKS**

1. The drawings were objected to under 37 CFR 1.83(a) for not showing every feature of the invention specified in the claims. The drawings do not show the coil having a series of 180 degree bends as recited in Claims 25 and 30 and the coil including fins and dimples as recited in Claims 21, 26 and 31. Claims 21, 25-26 and 30-31 have been canceled. Insofar as this objection might be applied to the claims now in the application, it is respectfully traversed. No corrected drawing sheets are required.

2. Claims 18-20 were rejected under 35 USC 102(e) as being anticipated by Carlson et al. ("Carlson"). Claim 18 has been amended to include the limitations of dependent Claims 19, 20 and 22. Insofar as this rejection might be applied to the claims now in the application, it is respectfully traversed.

Carlson et al discloses a method of cooling an axle assembly of a work vehicle, wherein the axle assembly includes a housing 12 that contains a chamber 26 filled with fluid that partially submerges differential gearset 36. (Carlson Col. 3 lines 34-48). Chamber 26 also includes a conduit assembly 42 which contains outflow/inflow tubes 50 and 52 that open into receptacles 94 and 96. (Carlson Col. 3 lines 49-67). However, Carlson teaches only that conduit assembly 42 is in a location about a majority of the periphery of differential gearset 36. (Carlson Figs. 2-3 and Col. 4 lines 39-48). The present invention discloses a method of cooling an axle assembly of a work vehicle wherein the cooling coil 28 **is disposed entirely underneath** the axle shaft "to ensure its immersion in lubricating oil in various pitch and roll angles of work vehicle 10." (Det. Desc. of the Pref. Embod. lines 20-22). Obviously, this is a significant limitation neither met nor suggested by Carlson and provides an important increase in heat exchange, particularly during rough operation. Independent claim 18, and thus also claims 21 and 23, should, as amended, be allowable over Carlson.

3. Claims 18-20, 22-24 and 27-28 were rejected under 35 USC 103(a) as being unpatentable over Baedke et al ("Baedke") in view of Carlson et al. Insofar as this rejection might be applied to the claims now in the application, it is respectfully traversed.

Independent Claims 18 and 24 have been amended to include limitations of claims depending from each. Baedke discloses a method of cooling an axle assembly of a work vehicle where the axle assembly includes an axle housing 12 that substantially surrounds the axle shaft 20. (Baedke Col. 2 lines. 61-68). Also located within axle housing 12 is a differential mechanism that includes a ring gear 42. (Baedke Col. 3 lines 13-19). The method disclosed in Baedke uses the rotational action of ring gear 42 to move lubricant from a reservoir at the bottom of axle housing 12 to a chamber **"located at an elevation relatively high on the differential housing."** (Baedke Col. 2 lines 1-5). The purpose of the Baedke invention is to reduce heat in a drive axle by circulating lubricant without the use of an external fluid power source pump. (Baedke Col. 4 lines 18-22). Neither Baedke nor Carlson discloses the use of a cooling coil disposed entirely underneath an axle shaft. Even when combining all of the elements of Carlson et al and Baedke et al, one of ordinary skill in the art would not have the method disclosed in the present invention. Claims 24-26 and 28 should now be allowable over the Baedke and Carlson combination.

4. Claims 18 and 20-28 were rejected under the provisions of 35 U.S.C. 103 as being unpatentable over Baedke et al in view of Klackner, et al. ("Klackner"). Insofar as this rejection might be applied to the claims now in the application, it is respectfully traversed.

Klackner discloses a method of cooling an axle assembly of a work vehicle, the axle assembly including an axle housing 21. (Klackner Col. 3 lines 16-20). A heat exchanger plate 71 is **positioned in the top half of the axle housing 21** so that it can receive lubricant that is thrown from the rotational meshing of the gears below. (Klackner Figs. 1-2 and Col. 3 lines 21-30). Although Klackner discloses that heat exchanger plate 71 may have fins, the

combination of all elements disclosed in Carlson, Baedke or Klackner does not disclose a method of cooling an axle assembly utilizing a cooling coil disposed entirely underneath an axle shaft. One of ordinary skill in the art would not learn all of the elements of the present invention from these three references.

5. Claims 29-31 and 33 were rejected under 35 USC 103(a) as being unpatentable over Holka et al ("Holka") in view of Klackner et al. Independent Claim 29 has been amended to include the limitation of dependent Claim 32. Insofar as this rejection might be applied to the claims now in the application, it is respectfully traversed.

Hvolka discloses a method of cooling the lubricating fluid that is heated from a wet multiple disk brake disposed within an axle housing. (Hvolka Fig. 5). However, Hvolka fails to disclose a coil disposed within the axle housing to remove heat from the lubricant. Although Klackner discloses a method of cooling an axle assembly by utilizing a heat exchange plate 71 **positioned in the top half of the axle housing** 21, the combination of all elements disclosed in Hvolka and Klackner does not disclose a method of cooling an axle through the transmission of heat from a wet multiple disk brake to a lubricating fluid, the lubricating fluid placed in contact with the outer surface of a cooling coil, the cooling coil disposed entirely underneath an axle shaft. One of ordinary skill in the art would not learn all of the elements of the present invention from these two references.

6. Claim 32 was rejected under 35 USC 103(a) as being unpatentable over Hvolka in view of Klackner and further in view of Schunck, et al ("Schunck"). Independent Claim 29 has been amended to include the limitation of dependent Claim 32. Insofar as this rejection might be applied to the claims now in the application, it is respectfully traversed.

Schunck discloses a gear drive housing 14 where heat exchanger tubes 20 are disposed in the lower half of gear drive housing 14, the heat exchange tubes 20 submerged beneath the surface of lubricating fluid and entirely

underneath the shafts. (Schunck Col. 2 lines 43-46). However, Schunck fails to teach a method of cooling an axle assembly where the outer surface of the coil is disposed between a brake assembly and a differential gearset as in the present invention. The combination of all elements of Hvolka, Klackner and Schunck do not disclose a method of cooling an axle through the transmission of heat from a wet multiple disk brake to a lubricating fluid, the lubricating fluid placed in contact with the outer surface of a cooling coil, the cooling coil disposed entirely underneath an axle shaft and disposed between a brake assembly and a differential gearset. One of ordinary skill in the art would not learn all of the elements of the present invention from these three references.

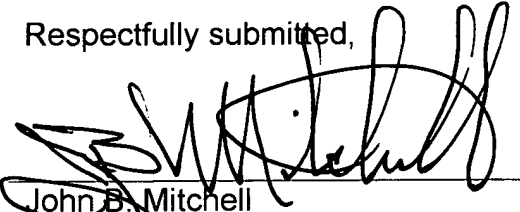
7. In summary, claims 19-22, 25-27 and 30-32 have been canceled, claims 18, 23-24 and 29 have been amended, and claims 18, 23-24, 28-29 and 33 remain in the application. Applicant believes that the claims as herein presented are allowable, and respectfully requests that the rejections be withdrawn and all remaining claims be allowed. No new matter has been added.

Pursuant to currently recommended Patent Office practice, the Examiner is expressly authorized to call Applicant's attorney, collect, at New Holland, Pennsylvania, if in his judgment disposition of this application could be expedited or if he considers the application ready for final disposition by other than allowance.

Date:

7/8/05

Respectfully submitted,



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